

**AUTOMATIC TEST PATTERN GENERATION FOR FUNCTIONAL REGISTER  
TRANSFER LEVEL CIRCUITS USING ASSIGNMENT DECISION DIAGRAMS**

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ABSTRACT

10 Test patterns are generated by generating assignment  
decision diagrams that represent a register transfer level  
digital circuit. A nine-valued symbolic algebra is used in which  
objectives are determined for portions identified in the  
assignment decision diagram. The objectives are justified and  
propagated by traversing the assignment decision diagram in which  
a test environment is found. Heuristics are used if a test  
15 environment is not initially found. Using the test environment  
found, predetermined test vectors are propagated to obtain a  
system-level test set. Each test set for each portion are  
concatenated to obtain a complete test set for the register  
transfer level digital circuit.

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